

Turning Movement Data Collection Guidelines

(Traffic Engineering Branch for the NCDOT TMT Traffic Data Collection Workstream)

August 6, 2008

A. General

1. Turning movement counts can be taken at both intersections and along corridors.
2. Turning movement counts may be collected by either NCDOT staff (Traffic Engineering, Divisions, Traffic Surveys, etc.) or consultants (private firms) under contract with NCDOT.
3. The collection of turning movement counts is technician level work. Therefore, the collection of this data does not need to be under the purview of a licensed engineer and, in the case of consultants, the firm itself does not need to be licensed or registered with the Board.
4. All original calculations, field notes, drawings, and any other necessary project information prepared should be the property of the NCDOT and should be turned over to the NCDOT upon completion of the work.
5. The data collecting agency should be responsible for ensuring that submittals are in a format compatible with analysis software.
6. Data collected at locations with an estimated combined entering volume (all approaches) below 25,000 vehicles per day (VPD) should be considered one-person counts.
7. Data collected at locations with an estimated combined entering volume (all approaches) of 25,000 VPD or greater but less than 50,000 VPD should be considered two-person counts.
8. Data collected at locations with an estimated combined entering volume (all approaches) of 50,000 VPD or greater should be considered special counts and may require three or more counters.
9. If the complexity or configuration of the location (e.g. five-leg, offset or skew, obstructed views, active railroad tracks, etc.) requires additional personnel to perform the count, the data collecting agency should obtain approval prior to performing the work.
10. If requested to collect data when schools are in session, the data collecting agency should be responsible for contacting the appropriate schools (public, private, traditional, year-round, colleges, universities, day cares, etc.) to verify that the schools will actually be in regular session (not delayed openings, early release days, teacher workdays, etc.). The data collecting agency will be responsible for requesting further instructions if school closure affects requested deadlines. The data collecting agency should notify any

affected schools of the date, time, and location of traffic data collection prior to conducting the actual work.

11. The data collecting agency should notify appropriate law enforcement agencies (Highway Patrol, Police, Sheriff, University, etc.) of the date, time, and location of traffic data collection prior to conducting the actual work.
12. Data collectors should be equipped with cellular telephones to facilitate resolution of potential problems regarding the work such as, but not limited to, crashes, congestion, and traffic signal malfunctions.
13. Each data collector vehicle at a location should be equipped with signs identifying and displaying the name and telephone number of the collecting agency.
14. The data collecting agency should be responsible for the completeness, accuracy, presentation, and review of any work sublet to others.
15. Data collection often requires short turnaround times (one to two weeks), and deadlines will be specified when a data collection request is made. Some requests may also be required on specific days or dates.
16. Turning movement counts are generally collected with PETRAPro software, and signal warrant analyses are generally performed using PC Warrants software.

B. Duration of Data Collection

1. The duration of turning movement counts should be based on the need for the data. For example, if turning movement counts are being collected for a PM peak crash issue, then only peak hour counts are needed. However, if turning movement counts are being collected for retiming a signal, then counts with a duration of 12 to 16 hours may be needed.
2. Currently, 16-hour counts (usually 6:00 a.m. to 10:00 p.m.) are the standard for most intersection turning movements due to signal warrant requirements in the MUTCD.
3. Turning movement counts are also available from firms under contract with the Traffic Engineering and Safety Systems Branch (TESSB) for 8-hour and 12-hour periods, but the beginning and ending times must be specified.
4. The TESSB will be dropping the 12-hour option in future contracts in favor of 13-hour and 14-hour options as recommended by Regional Traffic Engineers and Division Traffic Engineers in May, 2008. The current 12-hour option does not cover all of the peak hour traffic at many locations.

C. Required Information – Location

The data collecting agency (NCDOT or consultant) should compile a site sketch and inventory of the location to include, but not limited to, the following:

- a. Count number (station number, etc.), collecting agency's name and contact information (telephone number, etc.), responsible employee's name, counter name(s), data processor name(s), and count dates, times, and weather conditions,
- b. NCDOT division, county name, city name (if applicable), orientation of location, and directional north,
- c. Identification of approaches by primary (I, US, NC) or secondary (SR) route number(s) and local street name(s),
- d. Number of lanes and lane movement designations (left, through, right, or combination) for all approaches, and skew angle (if applicable),
- e. Posted and advisory speed limits on each approach leg (if applicable),
- f. Digital pictures of all approaches of the location,
- g. Presence of area lighting and traffic control devices (such as traffic signals, flashers, or stop signs) and their locations (if a traffic signal is present, the inventory number from the signal cabinet should be recorded),
- h. A description and address of any landmarks, intersections, land use, development, and businesses adjacent to, and in close proximity with, the location,
- i. The presence of highway construction activities involving narrowing or closure of travel lanes at or within a ¼ mile radius of the location, and
- j. A description and time of occurrence of motor vehicle crashes or any traffic congestion and obvious causes (such as short traffic signal phases, lack of signal progression, or signal malfunction).

D. Required Information – Data

1. Turning movements should be collected from all approaches (including driveways that act as an approach).
2. Turning movement counts should include heavy vehicles and pedestrians.
3. Heavy vehicle and truck counts should be collected in a format used by the PETRAPro software.

4. Pedestrian counts should be tabulated on the approach they cross.
5. Turning movement data should be collected with electronic count boards.
6. All work should be performed to current procedures consistent with the requirements found in the latest versions of the *Manual of Uniform Traffic Control Devices* (MUTCD) and the *Highway Capacity Manual (Special Report 209)*.
7. The collecting agency should supply collected data, as defined above, as follows:
 - a. Data collection reports (cover sheet and counts, peak hours, and summaries) should be in an electronic format (PDF).
 - b. Turning movement raw data should be in an electronic format (PPD).
 - c. Digital photos should be in an electronic format (JPEG).